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Seven new synonyms within the genus *Onthophagus* (Coleoptera: Scarabaeidae) from the Oriental Region

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Examination of the type material of the Oriental representatives of the genus *Onthophagus* Latreille, 1802 (Coleoptera: Scarabaeidae: Scarabaeinae: Onthophagini) deposited at the Natural History Museum in London, National Museum of Natural History in Paris, Museum of Natural History in Basel and National Museum in Prague revealed seven new synonyms. The names synonymized herein were described as separate species mainly for two reasons. The first reason owes to the insufficient knowledge of entire *Onthophagus* diversity from Oriental Region and the fact that authors describing new species did not check the type material or even original descriptions for already described taxa. The following synonymized species were likely described due to this oversight: *O. anamalaiensis* Balthasar, 1974; *O. chulapornus* Masumoto, Ochi & Hanboonong, 2008; *O. demaak* Masumoto, 1989; *O. jucundus* Arrow, 1931; *O. laosensis* Frey, 1971; and *O. parvidens* Frey, 1971. The second reason is the great range of intraspecific variation of such allometric characters as shape of head, horns and pronotum in *Onthophagus*. Therefore, detailed examination of the external characters for the large series of specimens, and careful study of male genitalia are required for reliable species identification. Unfortunately, this was not the case for many new species descriptions. In particular, *O. perroti* Paulian, 1978, was described as a species but actually only represents the minor form of *O. orientalis* Harold, 1868. The lectotype of *O. gracilipes* is designated in order to preserve the stability of zoological nomenclature.

The material examined in the present study is kept in the following institutions:

MNHN – Muséum national d'Histoire naturelle, Paris, France (O. Montreuil, A. Mantilleri)

NHB – Naturhistorisches Museum Basel, Switzerland (E. Sprecher)

NHM – Natural History Museum, London, UK (M. Barclay, M. Kerley)

NMP – National Museum Prague, Czech Republic (J. Hájek, M. Fikáček)

Onthophagus clermonti Paulian, 1931

Onthophagus clermonti Paulian, 1931: 271 (type locality: Hoa-Binh, Tonkin [Vietnam])

Onthophagus parvidens Frey, 1971: 98 **syn.n.** (type locality: Hoa-Binh, Tonkin [Vietnam])

Type material examined. *Holotype* of *O. clermonti* (MNHN), female bearing the following labels:

1. White, printed: Hoa-Binh (Tonkin) (A.de Cooman) Coll.J.Clermont
 2. Red, printed: TYPE
 3. White, handwritten: Clermonti type
 4. Orange: HOLOTYPE *O. clermonti* Paulian, 931 [handwritten] S. Tarasov det. 2009 [printed]
- Holotype* of *O. parvidens* (NHB), male bearing the following labels:
1. White, printed: HOA-BINH TONKIN VII. [handwritten] 1934 A.DE COOMAN
 2. Red, handwritten: Type
 3. White, handwritten: Type *Onthophagus* [printed] *parvidens* n.sp. ♂ det.G.Frey, 196 [printed]
 4. Orange: HOLOTYPE *O. parvidens* Frey, 1971 [handwritten] S. Tarasov det. 2009 [printed]
 5. White: *Onthophagus clermonti* Paulian [handwritten] S. Tarasov det. 2009 [printed]

Additional material examined: 1♂, Vietnam, Hoa Binh Lac Tho, leg. A. de Cooman (MNHN)

Remarks. Apparently, Frey did not take into account the insufficient and obscure description of *O. clermonti* based on one female and did not examine the holotype of the former. In the original description (Frey 1971) he compares *O. parvidens* with *O. deflexicollis* Lansberge, 1883. The type series of *O. clermonti* is comprised only of the holotype female, therefore it is not possible to examine the critical structures of the aedeagus for species identification in *Onthophagus*. However, I conclude that the holotypes of *O. clermonti* and *O. parvidens* are conspecific because they

share the same principle diagnostic character states of external morphology (e.g. the groundplan of the head, coloration, pronotum punctuation, etc.). Moreover, both type series were found at the same locality Hoa-Binh in Vietnam.

***Onthophagus cognatus* Boucomont, 1921**

Onthophagus cognatus Boucomont (in Boucomont & Gillet), 1921: 30 (type locality: Laos, prov. Tran Ninh [Laos, Xieng Khouang])

Onthophagus jucundus Arrow, 1931: 188 **syn.n.** (type locality: India Or Manipur)

Onthophagus jucundus Arrow; Bacchus, 1978: 104 (lectotype designation)

Onthophagus (Serrophorus) chulapornus Masumoto, Ochi & Hanboonong, 2008 **syn.n.** (type locality: Thailand, Chaiyaphum Prov., Chulaporn Dam)

Type material examined. Two syntypes of *O. cognatus* (MNHN), male and female bearing geographical label “LAOS, prov. Tran Ninh” and indicated by A. Boucomont as “*Onthophagus cognatus* n.sp.”.

Lectotype of *O. jucundus* (BMNH), female bearing following labels:

1. Round label: LECTOTYPE
2. White, printed: Doherty
3. Yellow, handwritten: [first character illegible] 4311
4. White, printed: India Or Manipur
5. White, printed: Fry Coll 1905-100.
6. White, handwritten: *Onthophagus jucundus*. type arrow
7. White: *Onthophagus* ♀ *jucundus* arrow [handwritten], M.E. Bacchus det 1975 [printed] 5 [handwritten].

LECTOTYPE [printed]

8. White: *Onthophagus cognatus* Bouc. [handwritten] S. Tarasov det. 2009 [printed]

Also, 1 ♀ paralectotype of *O. jucundus* bearing geographical label “Birmah Momeit”.

Remarks. I have examined large material of *O. cognatus* and similar species from Indochina. *Onthophagus cognatus* is widespread in Indochina and can be easily separated from similar species by external characters and structure of the aedeagus. Although I have not examined type specimens of *O. chulapornus* Masumoto, Ochi & Hanboonsong, 2008, the original description of this species is well illustrated with a photograph of the holotype and illustration of the aedeagus. These illustrations match the character states seen in *O. cognatus* and lead me to conclude that these names should be synonymized. It seems that *O. chulapornus* was described as a new species simply because the authors did not know the identity of *O. cognatus*. Likewise, the lectotype of *O. jucundus* was examined and matched *O. cognatus* in diagnostic external and aedeagal character states and these names are here synonymized.

***Onthophagus gracilipes* Boucomont, 1914**

Onthophagus gracilipes Boucomont, 1914: 219 (type locality: Carin Cheba [Myanmar])

Onthophagus (Digithonthophagus) laosensis Frey, 1971: 95 **syn.n.** (type locality: Laos, Sala Nam Chan Chin)

Type material examined. Lectotype of *O. gracilipes* (MNHN) **here designated**, male bearing the following labels:

1. White: Carin Cheba [printed] 500–1000m [handwritten] L. Fea [printed] XII-87 [handwritten]
2. White, printed: Mus. Civ. Genova
3. White, printed: MUSÉUM PARIS 1936 COLL. BOUCOMONT
4. Red, printed: Typus
5. White: Boucomont det. 191 [printed] 4 onthoph. gracilipes n.sp. ♂
6. Orange printed: Lectotypus *Onthophagus gracilipes* Boucomont, 1914 S. Tarasov design. 2009

Also, 1 ♀ paralectotype of *O. gracilipes* (MNHN), bearing labels identical to lectotype with the exception of the first label “Carin Ghecu 1300–1400m L. Fea II–III.88”. The lectotype is designated in order to preserve the stability of zoological nomenclature according to the article 74.7 (ICZN 1999).

Holotype of *O. laosensis* (NHB), female bearing the following labels:

1. White, handwritten: Laos: Sala Nam Chan Chin
2. White printed: VITALIS 1919–1920
3. White: *Onthophagus (Digithonthophagus)* n.sp. ♀ [handwritten] Dr. V. Balthasar det. [handwritten] 60. [printed]
4. Red, printed: TYPE
5. White: TYPE ♀ [handwritten] *Onthophagus* [printed] *Digithonthophagus laosensis* n.sp. [handwritten] det. G. Frey, 196 [printed]

6. Orange: HOLOTYPE *Onthophagus laosensis* Frey, 1971 [handwritten] S. Tarasov det. 2009 [printed]

7. White: *Onthophagus gracilipes* Bouc. [handwritten] S. Tarasov det. 2009 [printed]

Remarks. It seems that Frey (1971) did not thoroughly examine the description of *O. gracilipes* and did not see the

type series of the former. In the original description he compares *O. laosensis* with *O. troniccki* Balthasar, 1933. The type series of Frey's *O. laosensis* includes only a female holotype, however that was not an obstacle for identification because the type series of *O. gracilipes* includes a female. I synonymize these two names because the type series of *O. laosensis* and *O. parvidens* are conspecific based on their same principle diagnostic character states of external morphology: the unique color pattern of the elytra and body, the unique groundplan of head, and the identical pattern of pronotum punctuation. Additionally I have examined large material of *O. gracilipes* from other localities in Indochina and these also match the two series of both names in the characters detailed above.

***Onthophagus orientalis* Harold, 1868**

Onthophagus orientalis Harold, 1868: 83 (type locality: original description "Hongkong, Bengal"; lectotype designated by Zunino (1976) "Hong Kong")

Onthophagus orientalis Harold; Zunino, 1976: 79 (lectotype designation)

Onthophagus perroti Paulian, 1978: 40 **syn.n.** (type locality: Saigon [Vietnam])

Type material examined. Lectotype of *O. orientalis* (MNHN), male bearing the following labels:

1. White, printed: Ex Musæo E Harold
2. White, printed: Hong Kong
3. Red: Lecto [handwritten] TYPUS [printed] *Onthophagus orientalis* Har. [handwritten] M. ZUNINO 19 [printed] 76 [handwritten]

Also, 1 ♀ paralectotype of *O. orientalis* (MNHN), from the same locality.

Holotype of *O. perroti* (MNHN), male bearing the following labels:

1. White, printed: MUSÉUM PARIS SAIGON 1950 [handwritten] J. BARBIER
2. White: *Onthophagus perroti* n.sp. [handwritten] R. Paulian det. [printed]
3. Red, printed: HOLOTYPE
4. Orange: *Onthophagus perroti* Paulian, 1978 [handwritten] S. Tarasov det. 2009 [printed]
5. White: *Onthophagus orientalis* Har. [handwritten] S. Tarasov det. 2009 [printed]

Additional material examined: 1 ♂ (MNHN) bearing the same geographical label as the holotype and labeled by someone later as a paratype of *O. perroti* Paulian, 1978. The original description of *O. perroti* was based on a single specimen (Paulian 1978) and therefore this paratype label is erroneous.

Remarks. Based on my observations, *O. perroti* represents individuals exhibiting the minor form of the earlier described and common Oriental species *O. orientalis* Harold, 1868. The character states of external morphology of *O. perroti* (e.g. vertex horn, pronotum punctuation, etc.) are compatible with the range of variation of *O. orientalis*. Moreover, the holotype of *O. perroti* has the same aedeagus as the lectotype of *O. orientalis*.

***Onthophagus pseudojavanus* Paulian, 1931**

Onthophagus pseudojavanus Paulian, 1931: 272 (type locality: Hoa Binh, Tonkin [Vietnam])

Onthophagus demaak Masumoto, 1989: 93 **syn.n.** (type locality: Doi Suthep/Pui, Chiang Mai Prov. [Thailand])

Type material examined. Holotype of *O. pseudojavanus* (MNHN), male bearing the following labels:

1. White, printed: Hoa-Binh (Tonkin) (A.de Cooman) Coll.J.Clermont
2. Red, printed: TYPE
3. White, handwritten: *Onthophagus* sp. ? V. de javanus Lansb.
4. White, handwritten: *O. pseudojavanus* type
4. Orange: HOLOTYPE *Onthophagus pseudojavanus* Paulian, 1931 [handwritten] S. Tarasov det. 2009 [printed]

Paratype male of *O. demaak* (MNHN), with locality label "Doi Suthep/Pui Chiang Mai Prov. 30.VII.–5.VIII.1988 K. MASUMOTO leg."

Additional material examined: 1 ♂ and 1 ♀ (MNHN) bearing the same geographical label as that of the holotype of *O. pseudojavanus* Paulian, 1931 and indicated by R. Paulian as "*O. pseudojavanus* ? m."

Remarks. The examined paratype of *O. demaak* is conspecific with the type series of *O. pseudojavanus* because they share the same aedeagus, structure of the head, vertex horn, pronotum punctuation and body coloration. It seems that *O. demaak* was described as a new species simply because the author did not know the identity of *O. pseudojavanus*.

***Onthophagus vladimiri* Frey, 1957**

Onthophagus vladimiri Frey, 1957: 687 (type locality: Süd Indien, Anamalai Hills, Cinchona)

Onthophagus anamalaiensis Balthasar, 1974: 183 **syn.n.** (type locality: S. Indien, Anamalai Hills, Cinchona)

Type material examined. One male and one female *paratype* of *O. vladimiri* (NMP) bearing the following two geographical labels:

1. Anamalai Hills Cinchona 3500 ft.V.56

2. Süd Indien leg. Nathan

Holotype of *O. anamalaiensis* (NMP), male bearing the following labels:

1. White, printed: Anamalai Hills Cinchona S.Ind. 3500 ft.1959

2. Rose: *Onthophagus anamalaiensis* Holo Balt [handwritten] ~~Holotypus~~ [printed, crossed with hand]

3. White: *Onthophagus vladimiri* Frey, 1957 [handwritten] S. Tarasov det. 2009 [printed]

Remarks. The examined holotype of *O. anamalaiensis* is conspecific with the type series of *O. pseudojavanus* because they share the same aedeagus and principle diagnostic characters of the external morphology (structure of head and vertex horns, pronotum punctuation, body coloration, etc.). Moreover, both type series were collected at the same locality in southern India. It seems that *O. anamalaiensis* was described as a new species because the author did not know the identity of *O. vladimiri*.

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